DOCUMENT RESUME

ED 463 250 SP 040 540

AUTHOR	Lin, Emily
TITLE	Trends of Environmental Education in Canadian Pre-Service Teacher Education Programs from 1979-1996.
PUB DATE	2002-00-00
NOTE	29p.
PUB TYPE	Reports - Research (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Elementary Secondary Education; *Environmental Education; Foreign Countries; Higher Education; *Preservice Teacher Education
IDENTIFIERS	Canada

ABSTRACT

Despite being recognized as a major priority for research and action in many international conferences, environmental education (EE) research in pre-service programs has been given very little attention in Canada. The only systematic national evaluation of EE at the teacher preparation level in Canada was conducted by John Towler in 1980-81. In 1996, a national survey using a modified version of Towler's questionnaire was distributed to all pre-service teacher training institutions across the Canadian provinces to determine the current status of EE which pre-service teachers receive in their preparation programs. The survey findings reveal that, over the last two decades, the number of Canadian teacher preparation institutions offering EE courses to pre-service teachers has remained generally low and the level of priority granted to EE has been nominal. (Contains 27 references.) (Author/SM)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 463 250

Trends of Environmental Education in Canadian Pre-Service Teacher Education Programs from 1979 to 1996

Submitted by Emily Lin, PhD
Assistant Professor
Advanced Studies in Education
Grand Valley State University
301 West Fulton Suite 920
Grand Rapids, MI 49504-6495

E-mail: lme@gvsu.edu
Phone: (616) 771-6650
Fax: (616) 771-6515

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

E. Lin

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

SP040540

BEST COPY AVAILABLE

Abstract

Despite being recognized as a major priority for research and action in many major international conferences, EE research in pre-service programs has been given little attention in Canada. The only systematic national evaluation of EE at the teacher preparation level in Canada was conducted by John Towler (1980-81), nearly 20 years ago. A national survey using a modified version of Towler's questionnaire was distributed to all pre-service teacher training institutions across the Canadian provinces to determine the current status of EE which pre-service teachers receive in their preparation programs. The survey findings revealed that, for nearly two decades, the number of Canadian teacher preparation institutions offering EE courses to pre-service teachers has remained generally low and the level of priority granted nominal.

Need for Research at the Pre-service Teacher Education Level

Continually identified as one of the key agents of change, classroom teachers play an important part in promoting and improving the capacity of individuals to address environmental and development issue and problems. Wilke (1985) states that "if teachers do not have the knowledge, skills, or commitment to environmentalize their curriculum it is unlikely that environmentally literate students will be produced by K-12 school" (p. 1). Others agree with Wilke's position (Buethe & Smallwood, 1987; Childress, 1978; Fien & Rawling, 1996; Gigliotti, 1990; Hooper, 1988; Hungerford, Peyton & Wilke, 1980; Lucko, Disinger & Roth, 1982; McClaren, 1989; National EE Advisory Council, 1996; Robitaille & Sauvé, 1990; Sauvé & Boutard, 1991; Schwaab, 1975; Simmons, 1987; Simpson, Mclaughlin, Volk & Hungerford, 1989; Smith-Sebasto, & Smith, 1997; Stapp, Caduto, Mann & Nowak, 1980; Tilbury, 1994). Since classroom teachers are the ultimate source of environmental education (EE) implementation in schools, it is both sensible and necessary to examine the preparation of teachers for EE.

Ministers of Education in Europe and North America who participated in UNESCO conferences have continually emphasized that one of the greatest needs in the area of EE is the establishment of good pre-service courses for training teachers (Fien & Rawling, 1996; Tilbury, 1994; UNESCO, 1980; UNESCO-UNEP, 1988; Wilke, Peyton & Hungerford, 1987). Even in the 1977 Intergovernmental conference on EE in Tbilisi, European and North American educational authorities "recognized the importance of pre-service education and the need for teachers to understand the importance of EE in their teaching and called for steps to be taken to provide appropriate training of teachers in environmental education" (Wilke, Peyton & Hungerford, 1987, p. 3). In addition, the

preparation of teachers has been cited by successive UNESCO-UNEP conferences and reports as being a major priority for research and action in advancing EE (Fien & Rawling, 1996; Knapp, 2000; Tilbury, 1992, 1994; UNESCO, 1980, 1997; UNESCO-UNEP, 1988; Wilke, Petyon & Hungerford, 1987).

Pre-service Teacher Education Programs in Canada: Brief Summary of Past Studies

However, very few countries have consistently conducted national studies on the nature of EE programs for pre-service teachers. In Canada, Rioux (1973) reported that, in the early 1970's, little EE training was provided for teachers in the colleges and faculties of education at universities with only six out of the 41 universities offering environmental studies programs. Subsequent to Rioux, Towler (1980-81) has been one of the very few investigators to study the state of EE in Canada. In his cross-country study examining the status of EE in teacher training institutions, conducted nearly 20 years ago, Towler attempted to assess the practice and problems in terms of:

> How many institutions offered courses in environmental education content, background, methodology; how many faulty members were teaching in this area, and what kind of background these faculty members might have...how environmental education was being handled in the schools that they [faculty members] visited; whether some sort of certification in environmental education might be desirable or not; and isolate some of the factors that were perceived as major problems in environmental education (p. 13).

Towler (1980-81) found that, in the 1977-78 academic year, only18 out of the 41 (43%) teacher training institutions that responded to the thirteen-item questionnaire offered methodology courses. Among these institutions, the main emphases in the EE methodology courses were in the areas of ecology, outdoor education and biology. Towler specified that more prospective teachers were being schooled in ecological

content than in strategies and technique for assisting students to achieve the goals of EE. Echoing Towler's findings, Stapp et al. (1980) emphasized that one of the major problems with teacher training programs is that inexperienced teachers are usually left on their own to develop their own strategies of teaching EE. As a result, EE information is commonly conveyed to students through the lecture approach. Thus, the low number of teachers trained to teach EE cannot help but contribute to a "neutral if not a negative attitude towards the subject [EE] and its importance" (Towler, 1980-81, p. 15).

Towler (1980-81) concluded in the study that with so few teacher training institutions involved in the promotion of EE, there was a strong need for improved communication, research, funding and teaching resources in teacher preparation. Since Towler's study, no other comprehensive report has examined the status of EE in teacher training programs in Canada. An assessment of the present state of pre-service teacher education programs in Canadian institutions is long overdue, and may provide some insights into the progressions and acceptance of EE over the last 18 years. Towler and Francis (1980-81) predicted that Canada should witness a slow but deliberate growth in EE through the 1980's. The following study was an attempt to ascertain the changes that have occurred in pre-service teacher education programs since Towler's study.

Present Study: Methodology

Utilizing a survey research design, the current study was a repeated measure of Towler's (1980-81) study. The study was a census of all teacher preparation institutions, in that all the provincial institutions offering pre-service teaching programs were included in the survey. Because this study attempted to assess the current status and nature of EE in pre-service teacher programs and to make comparisons to Towler's findings, a

modified versions of Towler's postal questionnaire was used to obtain data for the study. In this way, standardization of the instruments in the two studies (Towler's and the current study) is achieved.

Data collection was conducted from March to May of 1996. The procedures in this current study closely followed Towler's study in order to maintain an integral basis for comparison. This attempt to minimize methodological variability in the two investigations added to the validity and reliability of this longitudinal study. Consequently, questionnaires with letters of introduction and self-addressed return envelopes were sent to the 45 Deans or Education Department Heads of the teacher preparation institutions. Theses Deans or Department Heads were assumed to be best able to select the respondent(s) most capable of providing the necessary information for the survey in her/his respective institution. The total number of institutions that responded to the survey questionnaire was 35 (77.8%). Subsequent to the data collection process, the responses were coded and the numerical data analyzed, yielding frequencies and percentages for each question item. The present study utilized analytical strategies similar to those used by Towler in order for comparative analyses to be conducted.

Findings: The Present Status and Progress of EE at the Teacher Preparation Level

(1) The Number and Type of EE

(a) As shown in Table 1, only 12 or 34.3% of the respondents indicated that their institutions offered separate EE methodology courses in their institutions in the current study. However, although the majority of the institutions (23 or 65.7%) was reported as not offering EE as a separate methodology course, six (26.1%) of these reported institutions provided EE as an integrated part of other courses in teacher education.

These six respondents indicated that EE was generally incorporated as part of a methodology course for general sciences (4 or 67.7%) or social sciences (3 or 50.0%). Consequently, 18 or 51.4% of the reported institutions surveyed in the current study offer EE as a methodology course or as part of another course in their pre-service teacher education programs.

These results from the current study when compared to Towler's findings indicate that the number of institutions offering EE methodology courses to prospective teacher across the nation has remained relatively stable over the last 18 years. Towler reported that in the 1978-79 academic year, 18 or 43% of the institutions offered methodology courses in EE and 1104 students were registered in such courses. Similarly, in the present study, 18 or 51.4% of the reported institutions offer EE either as a methodology course or as part of another course in their teacher preparation programs with a student enrollment of 1166. These findings reveal that a large number of Canadian teacher training institutions, whether in the present or the past (48.6% in the current study and 56.1% in Towler's investigation), did and still do not offer EE methodology either as a separate or integrated part of another course.

Table 1. Number of Provincial Institutions Offering EE Methodology Courses

Category	Count	Percent of Cases
Institutions Offering EE	12	34.3
Institutions Not Offering EE	23	65.7*
Total	35	100.0

*Six (26.1%) of the 23 institutions indicated that EE was integrated as part of other courses offered to pre-service teachers

(b) When the respondents in the current study were asked to identify courses other than methodology courses that dealt with ecology or environmental concerns for prospective

teachers in their institutions, only 12 or 34.3% of the 35 institutions were reported to offer such courses. The majority of the 35 institutions (21 or 60.0%) did not offer such courses. In addition, only 10 or 28.6% of the institutions in the present study were reported to offer prospective teachers a sequence of courses leading to a form of specialization such as major and/or minor in EE. The majority of the reported institutions (25 or 71.4%) did not offer courses leading to an EE specialization.

The evidence from the present study and Towler's enquiry suggests that the number of teacher training institutions offering non-methods courses pertaining to ecology or environmental concerns has decreased over the last 18 years. Towler reported that in his investigation, 25 or 60% of the institutions offered courses dealing with ecology and environmental concerns and issues. In the present study, the number of institutions offering such courses declined to 12 or 34.3%

(2) The Major Area of Emphasis in EE

When asked to indicate the curricular subject areas instructors included and emphasized in their EE methodology courses in the present study, the majority reported that they focused on ecology, conservation, outdoor education, biology and global issues. To a lesser degree, economics and geographical topics were emphasized in the methodology courses. The areas least emphasized were politics and sociology (Table 2).

Over the 18 year period, it appears that ecology and outdoor education remain as two of the major areas of emphasis of EE methodology courses. Similar to the results from the present study, Towler reported in his investigation that the subject areas that ranked as the top three most commonly emphasized in EE methodology courses were ecology, outdoor education and biology (ranked first, second and third, respectively).

The area of conservation education which was ranked fifth in Towler's study and second in the present study has emerged as one of the major focal areas of methodology courses in recent years.

Table 2. Rank Order of Major Curricular Area Emphasis in EE Methodology Courses (n=12)

Area of Emphasis	Rank Order
Ecological	1
Conservation	2
Outdoor Education	3
Biological	4.5
Global Issues	4.5
Geographical	6.5
Economical	6.5
Sociological	8.5
Political	8.5
Integration of EE	9
Principles of EE	10.5
EE Issues	10.5

(3) The Number, Qualifications, Involvement and Knowledge of Faculty Members who Participate in EE at the Pre-service Teaching Level

(a) In the 1995-96 academic year, the respondents reported that there were 26 EE instructors employed on a full-time basis, while 34 of the instructors taught on a part-time basis. The majority of these 60 instructors held degrees in education (32 or 53.3%) and in the field of biology (24 or 40.0%) in the present study (See Table 3).

Towler indicated, at the time of his investigation, that there were 33 full-time and 31 part-time faculty members teaching EE (giving a total of 61 instructors). The findings from the studies suggest that the number of faculty members teaching EE courses in 1996 was comparable to the number of EE instructors teaching at the pre-service teacher level

18 years ago. In terms of academic qualifications, the results of the two studies make evident that the majority of the faculty members teaching EE have consistently been academically prepared in the fields of education and biology over the last 18 years. Comparable to the findings in the current study, in the 1975-76 academic year, 21 or 34% of the faculty members held degrees in education while 11 or 18% of the instructors possessed biology degrees. Likewise, the number of faculty members with degrees in EE have remained relatively low across the nation, with one 5 or 8% of the faculty members possessing degrees in EE in Towler's investigation while seven or 11.7% of the instructors had degrees in Environmental science/studies in the current study.

Table 3. Frequency Distribution of the Academic Qualifications of EE Faculty Members (n=60)

Degree Fields	Count	Percent of Cases
Education	32	53.5
Biology	24	40.0
Environmental Science/Studies	7	11.7
Ecology	5	8.3
Geography	5	8.3
Chemistry	1	1.7
Engineering	1	1.7
Geology	1	1.7
Total	76*	126.9*

*Figures total greater than 60 faculty members and 100% due to more than one response being possible for each faulty member.

(b) The level of participation among faculty members involved in EE projects such as funded projects, development of curriculum materials, and research concerning EE has remained low over the 18 year period. Towler revealed that only five or 8% of the faculty members participated in funded projects and fewer than 30% or two faculty members were involved in curriculum materials design at the time of his investigation. Comparable to this low participation rate, the current study indicated that only 13 or

21.7% of the faculty members were actively involved in EE funded projects and research. Similarly, fewer than 29% or 17 faculty members were participating in EE curriculum design in the current study. Generally, over 70% of the faculty members were not involved in EE projects other than teaching pre-service teachers' courses in both the current study or in Towler's study.

Table 4. Frequency Distribution of Faculty Members Involved in EE Projects (n=60).

Categories of Projects	Number of EE Faculty Members Involved	
	Count	Percent of Cases
Number of Funded EE Projects	13	21.7
Development of EE Curriculum Materials	17	28.3
Development of EE for K-12 School Use	16	26.7
Research in EE	13	21.7
Total	59*	98.4*

*Figures total less than 60 and 100% due to three missing responses.

Table 5. Frequency Distribution of Faculty Members Involved in EE Projects according to the Number of Institutions (n=35)

Categories of Projects	Existence of Involvement Among Faculty Members		Total*
	Yes (%)	No (%)	
Number of Funded EE Projects	12 (37.%)	20 (62.5%)	32
Development of EE curriculum Materials	13 (40.6%)	20 (59.4%)	32
Development of EE for K-12 School Use	11 (32.4%)	22 (67.6%)	34
Research in EE	10 (28.6%)	22 (66.7%)	33

*Figures may be less than 35 due to three missing responses

(c) In an attempt to measure how knowledgeable faculty members were about exemplary EE projects in their geographical region, respondents in the present study were requested to identify the names of such notable EE programs and/or projects. Only 12 or 34.3% of the respondents from each institution could list the name of such EE programs and/or projects. Conversely, just over 65% of the respondents could not identify exemplary cases in their geographical location.

These results when examined with Towler's findings indicate that, in general, the number faculty members who are knowledgeable about exemplary EE projects in their geographical region still remains relatively low, although there has been some improvements over the 18 year period. More than 78% of the faculty members in Towler's investigation and over 65% of the faculty members in the current study could not provide the name of exemplary EE programs in their region.

(4) The Place of EE in K-12 Schools

In determining how EE was incorporated into schools at the elementary and secondary levels, respondents were requested to identify the subject areas categories into which EE was integrated based on their previous experiences and observations in the schools within their geographical area in the current study. As shown in Table 6, in general, EE was reported to be most commonly incorporated as part of science courses at both the elementary and secondary school levels (82.9% and 77.1%, respectively) in 1996. Social studies was identified as the next frequently observed subject area into which EE was integrated into the elementary (51.5%) and secondary (25.7%) curriculum. Similarly, respondents reported that EE was also commonly observed as being taught throughout the school curriculum at the elementary (40.0%) and secondary (28.6%) level. Other frequently mentioned areas of EE integration included geography and technology, at both school levels. However, rather than viewing EE as a component of other subject areas, one respondent noted that EE was seen as a separate course at the elementary level while 10 or 28.6% of the respondents recounted that separate EE courses were offered to secondary students. In contrast, five or 14.3% of the respondents observing elementary

schools and one or 2.9% respondent observing secondary schools indicated that they had not viewed any active incorporation of EE into the school system in their region.

These results appear to support Towler's findings. That is, in general, EE has been observed to most commonly incorporated as part of science and social studies courses in elementary and secondary schools over the last 18 years. EE was seen by 33 or 80% of the faculty members to be included as part of science courses while 22 or 54% of the faculty viewed EE to be incorporated as part of social studies in Towler's investigation. However, one notable change that has occurred in the last 18 years is the number of elementary and secondary schools offering EE as integrated throughout all school subjects. In the current study, faculty members mentioned that EE was commonly observed as being taught throughout the school curriculum at the elementary (40.0%) and secondary (28.6%) school level. Towler did not mention observing EE being offered as integrated throughout all school subjects.

Table 6. Frequency Distribution and Rank Order of EE Integration into Subject Areas at the Elementary and Secondary School Levels.

Subject Area Categories	Observations of EE Incorporation into School Subjects					
	Elementary Level		Secondary Level		Both Elementary & Secondary Levels	
	Count	Percent of Cases	Count	Percent of Cases	Count	Rank Order
Science	29	82.9	27	77.1	56	1
Social Studies	18	51.4	9	25.7	27	2
EE Integrated Throughout	14	40.0	10	28.6	24	3
Geography	4	11.4	9	25.7	13	4
EE as a Separate Course	1	2.9	10	28.6	11	5
Technology	4	11.4	6	17.1	10	6
EE not seen at all	5	14.3	1	2.9	6	7
Others	1	2.9	2	5.7	3	8
Total	76*	197.2*	74*	211.4*		

*Figure exceeds 35 and 100% due to more than one response possible from respondents for each category.

(5) Teacher Certification in EE in Pre-service Teacher Programs

In the current study, more than half (18 or 51.4%) of the faculty members indicated that they would be opposed to instituting teacher certification of EE in their institutions, while 12 or 34.3% of the faculty members would support such actions. The majority (8 or 44.4%) of the faculty members against teacher certification in EE reasoned that they did not support any form of specialization or fragmentation in pre-service teacher programs. Rather, these respondents believed that EE should be integrated into the entire pre-service teacher program. Conversely, the majority (6 or 50%) of the faculty members in favour of teacher certification in EE believed that certification would provide perceived importance and recognition to the EE field among education community. Five or 14.3% were undecided on this issue of teacher certification. (See Table 7).

Compared to 18 years ago, when EE educators were evenly divided on the issue of teacher certification in the area of EE, the majority of EE educators today tend to oppose teacher certification in EE. In contrast to the findings in the current study, Towler reported that 17 or 41% of the EE educators were in favour of teacher certification in this area while 15 or 37% of the educators were against such certification in his investigation.

Table 7. Frequency Distribution of Respondents' Desirability of Teacher Certification in EE. (n=35).

Category	Count	Percent of Cases
In Favour of EE Certification	12	34.3
Against EE Certification	18	51.4
Undecided	5	14.3
Total	35	100

(6) The Importance of EE in Pre-service Teacher Programs[1]

In the current study, respondents were requested to rate the importance of EE relative to the other required courses offered to prospective teachers using three Likert-type items ranging from "top priority" to "low priority". As indicated in Table 8, the majority (48.6%) of the respondents viewed EE to be low in priority when compared to other subjects offered to pre-service teachers. However, eight or 22.9% of the respondents reported that their institution looked favourably on EE and rated EE as a high priority in teacher training programs. One respondent from this group also mentioned that although he had rated EE to be of great importance, he also considered other components of the teacher pre-service program to be equally important.

For those institutions that did not offer methodology courses in EE, respondents of the 23 institutions were asked if there were future plans for implementing EE courses into their respective pre-service teacher training programs. Overwhelmingly, 17 or 73.9% of the respondents indicated that their institution had no such plans in the near future. Only two or 8.7% of the faculty members reported that their institutions had plans for inclusion of EE courses in their teacher preparation programs in the near future.

Table 8. Frequency Distribution of the Relative Importance of EE in Teacher Preparation Institutions.

Category	Count	Percent of Cases
Top Priority	8	22.9
Medium Priority	10	28.6
Low Priority	17	48.6
Total	35	100.1

(7) The Barriers/Major Problems in Teaching EE

When respondents in the present study were asked to determine the major problems concerning the teaching of EE courses in their institutions, the most commonly identified barrier to implementing EE was the lack of financial support. Over half (51.4%) of the respondents described fiscal restraints in recent years as one of the major obstacles in promoting and developing EE courses in their institution.

As shown in Table 9, 13 or 37.1% of the respondents classified time and space constraints in the existing pre-service teacher training programs as the next most common barrier to the implementation of EE courses. Some of these respondents explained that many of the programs were already full and there may be problems associated with integrating another subject into the existing programs. Part of these problems stem from attitudinal barriers, as indicated by 31.4% of the respondents. Many of these respondents reasoned that many of their administrators and peers view EE as a "frill" subject and that implementation of such a "fringe" course into an already strained pre-service teacher curricula was difficult to justify. As one respondent wrote: "EE is often mentioned along with Theatre Arts (drama education) as 'a frill course'...and most of the faculty are too tied to the narrow traditional curricula".

Although the problem of fiscal restraints in EE remains unchanged from 18 years ago, the lack of communication among EE educators no longer ranks as a primary problem. In his investigation, Towler indicated that the main factors that hindered the teaching of EE in Canada were the absence of funding and the lack of communication among Canadian EE educators.[ii] In the recent study, "lack of communication" was only mentioned by five or 14.3% of the faculty members as a common problem in promoting

EE. In addition, rather than viewing inadequate teaching materials/texts/resources as major barriers in incorporating EE in teacher preparation programs, many faculty members in recent years tend to identify logistical constraints and attitudinal barriers as more compelling factors.

Table 9. Frequency Distribution and Rank Order of Respondents' Perceived Barriers to Implementing EE Courses.

Category	Count	Percent of Cases	Rank
Inadequate Funding	18	51.4	1
Lack of Time/Space in Pre-service Teaching Programs	13	37.1	2
Lack of Administrative/Faculty Support for EE in Programs	11	31.4	3
No Demand/Mandate/Interest Of EE in Institutions and/or Schools	10	29.0	4
Inadequate Teaching Materials And Equipment	9	25.7	5
Inadequate Texts for Teachers	7	20.0	6.5
Lack of Canadian Content In Materials	7	20.0	6.5
Lack of EE Instructors in Institutions	6	17.1	8.5
Inadequate Texts for K-12 Schools	6	17.1	8.5
Lack of Research	5	14.3	10.5
Lack of Communication Among	5	14.3	10.5
EE is Only Offered in the Summer	1	2.9	11.5
No Major Problems	1	2.9	11.5
Total	99*	283*	

*Figures total greater than 35 and 100% due to more than one response possible from respondents for each category.

Summary

1. The number of Canadian teaching institutions offering environmental education courses to pre-service teachers has remained low for nearly two decades. Despite the call during several UNESCO-UNEP international conferences for better preparation of teachers as one of the primary concerns in the environmental education field, the survey in this study has revealed that the preparation of pre-service teachers currently remains at an inadequate and underdeveloped level in Canada. At the time of the current study, only 12 out of the 35 institutions surveyed offered separate environmental education methodology courses while another six institutions reported that they integrated aspects of environmental education in other methodology courses, primarily in the more traditional areas of science and social studies. Moreover, the number of teacher preparation institutions offering courses pertaining to ecology or environmental concerns has declined in the last 18 years. The result is that over 65% of the teacher training institutions surveyed do not offer either environmental education courses and/or specialization programs for environmental education. This indicates that the provision of environmental education within teacher preparation programs has remained relatively unchanged for nearly two decades, despite the increasing commitment to teacher preparation in environmental education at important international conferences. The distance between repeated declarations prioritizing environmental teacher education in international policies and the resistance to practical implementation of adequately developed programs appears to be widening.

2. Pre-service environmental education courses tend to emphasize ecology, conservation education, outdoor education and biology. The traditional forms of environmental education—ecology, conservation, outdoor education and biology—were commonly found to be the major emphasis in the majority of recent methodology courses across the nation. In general, the resurgent popularity in conservation education, contrasting with the lack of political and sociological issues in environmental methodology courses, suggest that environmental education is still being viewed as narrowly focusing on knowledge, skills, and awareness about natural resources and their management and has not widened or deepened to an understanding of environmental education that includes socio-economic or political aspects of society. Because environmental education appears to be about the environment and primarily taught within the context of science and social studies courses, there is a danger of uncritically accepting, legitimizing, and perpetuating scientific, "technical" solutions to environmental problems (Robottom, 1983). Although education about the environment is valuable, in that it is strong in providing environmental knowledge and skills, the major concern and danger is that the majority of teacher training institutions provide and prepare pre-service teachers with only this partial view of environmental education—one that is rationalist, technocratic and ignores the socially critical and political action purposes of environmental education.

3 Overall, pre-service teachers continue to receive much of their environmental education training from faculty members who (a) possess degrees in education and biology and (b) have low levels of participation in environmental education projects

and research. Many of the environmental education courses offered to prospective teachers in most of the teacher training institutions are located in science departments. Because environmental education courses are predominantly taught by science specialists rather than environmental educators, the major emphasis in courses related to environmental education is on scientific ecological principles and concepts. Generally, the majority (over 70%) of the instructors working with pre-service teachers are not actively involved in curriculum development and design, or engaged in research in environmental education. Furthermore, most of the instructors surveyed were unable to provide names of exemplary environmental education projects in their geographical region. In addition, because teacher educators appear to lack adequate knowledge and skills in teaching about differing conceptions and ideologies of environmental education, expectations for change, innovations and progress in the field will continue to be low and slow.

4. Generally, environmental education in Canada has not progressed greatly in the last two decades. Environmental education continues to be a low priority in K-12 schools and teacher preparation programs. Many of the problems associated with the preparation of pre-service teachers in Towler's study conducted in the early 1970's remain relatively unchanged in the current study. Environmental education is still generally regarded as a low priority in the training of effective pre-service teachers in Canadian institutions. Few, if any, current teacher training programs in Canada adequately and effectively offer courses to pre-service teachers that foster the understanding and skills necessary to teach the goals of environmental education to school grade students. Environmental education remains at the fringe of most pre-

service teacher training programs and the prospects of significant environmental education program implementation appears dim. Overall, even those few teachers who are currently receiving environmental education are not effectively prepared because they appear to be receiving only a narrow view of environmental education. Furthermore, environmental education is usually incorporated as part of the science or social studies curricula in the very few K-12 schools that offer environmental education.

5. The low-standing status of environmental education at the pre-service teacher level will continue to persist unless the following major barriers are addressed: barriers in institutional practices and organizations, barriers at the faculty level, and barriers encountered by instructors of pre-service teachers. Environmental education clearly is not a priority at any level within the Canadian educational system and the continual absence of adequate support and funding for environmental education severely hampers the development and conduct of research, methodologies, curricular resources materials and the number of professionals involved in the field. The inflexible scheduling and arrangement of discipline-dominated organizations of many current teacher training institutions militate against the interdisciplinary, problem-solving, critical action aims of environmental education. At the faculty level, there appears to be a general lack of awareness, interest, commitment, direction and leadership in implementing environmental education in teacher education programs. Environmental education often suffers from a lack of academic respectability among faculty members and, in many cases, there is an absence of individuals employed on a

full-time basis who are devoted to the long-term design, promotion, and preparation of a system to effectively instruct pre-service teachers in environmental education.

Limitations

This survey study was significant in providing evidence that there is a general pattern of inattention to environmental education in pre-service teacher preparation programs across Canada. Replication of this study in the future will gauge and reveal the development and progression of the field across the nation and identify areas for reform and innovation for administrators and researchers on a national and international level.

However, modifications of the procedures may be considered in replicating this study. The findings of this study revealed that most pre-service teacher education programs that offer courses entitled "environmental education" focus on areas such as ecology, conservation education, outdoor education and biology rather than addressing sociological and political issues. It may be possible that other existing courses such as global education and geography methodology in the pre-service teaching programs across the nation are presently addressing issues that link the environment to social justice, economics, gender, and political literacy. Thus, some existing programs across the country may be already providing prospective teachers with opportunities to develop moral and political awareness as well as the concepts, values, skills and commitment that support a global perspective and democratic methods of decision-making and problem-solving. In order to uncover and determine whether environmental education is housed under other courses that are not labelled "environmental education," it may be worthwhile to identify respondents who teach courses that include any number of dimensions and forms of environmental education to prospective teachers. In this way, a broader, more

complete picture of environmental education in pre-service teachers programs may be painted and understood.

References

Buethe, C. & Smallwood, J. (1987). Teachers' environmental literacy: check and recheck, 1975 and 1985. The Journal of Environmental Education, 18(3), 39-42.

Childress, R. B. (1978). Public school environmental education curricula: A national profile. The Journal of Environmental Education, 9(3), 2-12.

Fien, J. & Rawling, R. (1996). Reflective practice: A case study of professional development for environmental education. The Journal of Environmental Education, 27(3), 11-20.

Gigliotti, L. M. (1990). Environmental education: what went wrong? What can be done? The Journal of Environmental Education, 22(1), 9-12.

Hooper, J. K. (1988). Teacher cognitions of wildlife management concepts. The Journal of Environmental Education, 19(3), 15-18.

Hungerford, H. R., Peyton, R. & Wilke, R. J. (1980). Goals for curriculum development in environmental education. The Journal of Environmental Education, 11(3), 42-47.

Knapp, D. (2000). The Thessaloniki declaration: A wake-up call for environmental education? . The Journal of Environmental Education, 31(3), 32-39.

Lucko, B. J., Disinger, J. R. & Roth, R. E. (1982). Evaluation of environmental education programs at the elementary and secondary school levels. The Journal of Environmental Education, 13(4), 7-12.

McClaren, M. (1989). Developing environmental literacy: the critical element of liberal education for the 21st century. Education Manitoba, 16(5), 10-12.

National Environmental Education Advisory Council. (1996). Report Assessing Environmental Education in the United States and the Implementation of the National Environmental Education Act of 1990. Washington, DC.: U.S. Environmental protection Agency Environmental Education Division.

Rioux, J. C. (1973). Environmental Education in Primary and Secondary Schools in Canada. Ottawa: Environment Canada.

Robitaille, J. & Sauvé, L. (1990). L'éducation relative l'environnement l'école primaire et secondaire au Québec: êtat de la situation. Research Report to the Ministere de l'Environnemente du Québec. (p. 140) Québec: Service de l'éducation et de la formation.

Robottom, I. (1983). Science: A limited whole for environmental education? The Australian Science Teachers' Journal, 29(1), 27-31.

Sauvé, L. & Boutard, A. (1991). Environmental education in Quebec: time for concerted action. European Journal of Education, 26(4), 347-355.

Schwaab, K. E. (1975). A survey of the effectiveness of environmental education teaching methods as rated by public school teachers and professors of education in Illinois. Southern Illinois University. Dissertation Abstracts, 36(12), 7752-A. UMI 76-13, 286: 210.

Simmons, D. A. (1987). The teacher's perspective of the resident environmental education experience. The Journal of Environmental Education, 19(2), 35-42.

Simpson, P. R., McLaughhlin, J., Volk, T., & Hungerford, H. (1989). A survey

concerning teachers' perceptions of the importance of SRSI issues. The Journal of Environmental Education, 21(1), 31-37.

Smith-Sebasto, N. J. & Smith, T. L. (1997). Environmental education in Illinois and Wisconsin: A tale of two states. The Journal of Environmental Education, 28(4), 26-36.

Stapp, W. B., Caduto, M. J., Mann, L. & Nowak, P. F. (1980). An analysis of pre-service environmental education of teachers in Europe and an instructional model for furthering this education. The Journal of Environmental Education, 12(2), 3-10.

Tilbury, D. (1992). Environmental education within pre-service teacher education: The priority of priorities. International Journal of Environmental Education and Information, 11(4), 267-280.

Tilbury, D. (1994). An international development of environmental education: a basis for a teacher education model? International Journal of Environmental Education and Information. 13(1), 1-20.

Towler, J. O. (1980-81). A survey of Canadian pre-service training in environmental education. The Journal of Environmental Education, 12(2), 11-16.

Towler, J. O. & Francis, G. (1980-81). Observation o the current status of environmental education in Canada, part II: environmental education at post-secondary levels in Canada. The Journal of Environmental Education, 12(2), 17-19.

UNESCO (1980). Environmental Education in the Light of the Tbilisi Conference. Paris: UNESCO.

UNESCO (1997). Educating for a sustainable future. (UNESCO Publication No. DPD-97/CONF.401/CLD.1). Paris: UNESCO.

UNESCO-UNEP. (1988). International Strategy for Action in the Field of Environmental Education and Training for the 1990s. Paris: UNESCO.

Wilke, R. J. (1985). Mandating pre-service environmental education teacher training: the Wisconsin experience. The Journal of Environmental Education, 17(1), 1-8.

Wilke, R. J., Peyton, R. B. & Hungerford, H. R. (1987). Strategies for the Training of Teachers in Environmental Education. Paris: UNESCO.

Notes

[1] Towler did not include this question in his investigation.

[11] According to Towler (1980-81), "lack of communication" meant that "there was no organized way to disseminate information related to EE" (p. 15).

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC Clearinghouse on Teaching
and Teacher Education
1307 New York Ave., NW
Suite 300
Washington, DC 20005-4701

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200
Toll Free: 800-799-3742
FAX: 301-552-4700
e-mail: ericfac@inet.ed.gov
WWW: http://ericfac.piccard.csc.com

EFF-088 (Rev. 2/2000)